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# **Update to Taxonomy of Major Computation Technology Area (CTA) Software at CEWES Major Shared Resource Center (MSRC)**

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# **Update to Taxonomy of Major Computation Technology Area (CTA) Software at CEWES Major Shared Resource Center (MSRC)**

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## **I. INTRODUCTION**

On 13 March 1997, the Programming Environment and Training (PET) team at the U.S. Army Corps of Engineers Waterways Experiment Station (CEWES) Major Shared Resource Center (MSRC) published a report on the initial taxonomy of center users by Computational Technology Area (CTA). The previous report was an assessment of utilization on the Cray C90 and YMP vector mainframes. Since that time, the Cray T3E, the IBM SP, and the SGI Origin 2000 (O2K) scalable parallel platforms have been installed and added to the available High Performance Computing (HPC) capability at CEWES MSRC. Utilization software that allows an update to the earlier user taxonomy recently became available. This report documents new taxonomy data that the PET on-site team has analyzed during the July – December 97 time period for the C90, September – November 1997 for the T3E, and September – November 1997 for the SP. O2K data are not yet available and will be covered in a future taxonomy report.

The CEWES MSRC provides full support to five CTAs: Computational Fluid Dynamics (CFD), Computational Structural Mechanics (CSM), Climate / Weather / Oceans Modeling (CWO), Environmental Quality Modeling (EQM), and Forces Modeling and Simulation / C4I [Command, Control, Communications, Computers and Intelligence] (FMS). There are also several other CTAs that absorb significant HPC resources at CEWES MSRC, despite the fact that they are not fully supported by domain expertise at the center: Signals and Image Processing (SIP), Computational Chemistry and Materials (CCM), and Computational Electromagnetics and Acoustics (CEA), for example.

The objectives of this current analysis are to (1) assess the extent to which CEWES MSRC users have migrated their codes and production HPC runs to the scalable parallel platforms; (2) determine the levels of parallelism being employed by DoD users at CEWES MSRC; and (3) identify users who consume the largest amount of resources in order to prioritize assistance from both the PET team and the Computational Migration Group (CMG). CMG is specifically chartered to assist CEWES MSRC users in migrating vector codes from the C90 to the parallel platforms.

There are several possible “metrics” that might be used to determine whether a particular user or application is “resource intensive.” The prior taxonomy report used megaword hours (MWh), the product of memory words and CPU hours, as the primary metric. However, this metric is not universally appropriate, especially with regard to the parallel platforms. For example, the amount of memory allocated to a user on the IBM SP is strictly a function of the number of processor elements (PEs) requested, because all of the memory allocated to that processor is exclusively available to the application whether it is used or not. Not only does this have important implications for partitioning of problems for optimum parallelism, it also negates MWh as a valid metric for the SP if the objective is to identify codes that consume large amounts of both memory and time. In this report, we examine MWh, average number of PEs used, and total CPU time used as alternatives. We fully recognize that other metrics, such as the distribution of number of PEs versus CPU, average numbers of PEs weighted by CPU, etc., might provide additional insight into the ways in which the scalable parallel platforms at CEWES MSRC are being used.

Table 1 summarizes the utilization of the Cray C90 at CEWES MSRC for the July – December 1997 time period. [Note that C90 utilization only includes jobs that consume at least 30 minutes of CPU time. This is to exclude “housekeeping” tasks such as compilations, etc.] Contrast this with the same data for the July – December 1996 time period shown in Table 2 from the earlier taxonomy report. First of all, the total MWh for the last half of CY96 was 4,465 MWh; for the more recent time period, it was 2,083. This illustrates the dramatic shift of HPC work to the new parallel platforms during the first half of CY97. Moreover, the order has shifted because of apparent migration of CSM, CCM and SIP work to the other platforms. The total CFD utilization on the C90 remains almost the same as it was a year ago. The previous report made note of the fact that many DoD CFD users at CEWES MSRC are working with older CFD codes for a specified period of time; they sometimes express no interest in migrating these codes to the parallel machines, despite the projected decommissioning of the C90.

	CTA	CFD	CSM	CCM	CWO	EQM	CEA	SIP	Other
Usage	1,449	234	120	108	54.2	17.1	0.6	0.7	

**Table 1. CEWES MSRC C90 Utilization in thousands of Megaword-Hours by CTA, Jul-Dec 97**

CTA	CSM	CFD	SIP	CCM	CWO	CEA	EQM	Other
Usage	1,700	1,560	545	372	110	68	62	110

**Table 2. CEWES MSRC C90 Utilization in thousands of Megaword-Hours by CTA, Jul-Dec 96**

Table 3 shows the utilization of the Cray T3E by CTA for the September – November 1997 time period. A total of 436,467 CPU hours were run on the T3E during this time. It is clear that this is where a significant portion of the CSM, CWO, CFD and CCM work has moved from the C90.

CTA	CSM	CWO	CFD	CCM	CEA	CEN	SIP	Other
Usage	202	102	53.8	47.4	9.3	7.1	6.1	8.8

**Table 3. CEWES MSRC T3E Utilization in thousands of CPU-Hours by CTA, Sep-Nov 97**

Table 4 shows the utilization of the IBM SP in CPU hours by CTA for the September – November 1997 time period. A total of 234,546 CPU hours were run on the SP during this time. As with the T3E, CWO and CSM are the highest initial users of this scalable parallel platform.

CTA	CWO	CSM	CFD	CCM	SIP	FMS	EQM	Other
Usage	94	59	39	28.8	3.3	4	1.2	5.2

**Table 4. CEWES MSRC SP Utilization in thousands of CPU-Hours by CTA, Sep-Nov 97**

Table 5 lists the Account Code ID (ACID) users of the C90 during July – December 1997 in descending order by MWh used. The top ten institutional users of the Cray C90 resource during that timeframe were: AFRL-WPAFB, NRL-DC, NSWC-Carderock, CEWES, ONR-DC, ARL-Aberdeen, DSWA-Albuquerque, AFOSR, USAF Space and Missiles Systems Center (SMC), and AFRL-Kirtland. These ten groups of users accounted for 86 per cent of the MWh expended on the C90.

Table 6 lists the top users of the Cray T3E during the September – November 1997 time period. They are CEWES, NRL-Stennis, AFRL-Edwards, ONR-DC, AFRL-Kirtland, AFOSR, NCCOSC, AFRL-WPAFB, ATCOM, and NUWC-Newport. Most of these are averaging around 50 PEs, but AFRL-Kirtland is consistently using the full machine. As indicated previously, the “average numbers of PEs” could be skewed significantly if a number of small PE jobs are being run to check out codes prior to a small number of large PE production runs. That is why other metrics, such as number of

PEs weighted by CPU time, may be more appropriate to track in the future. CEWES is using almost half the T3E in terms of CPU time.

ACID	MWh	% total MWh	Cum % MWh
writw	272,643	13.1	13.1
nrldc	260,217	12.5	25.6
nswcc	227,185	10.9	36.5
cewes	198,500	9.5	46.0
onrdc	164,413	7.9	53.9
arlap	155,099	7.4	61.4
dswaa	153,641	7.4	68.7
afosr	139,621	6.7	75.4
smcca	117,696	5.6	81.1
philk	111,381	5.3	86.4
micom	76,049	3.6	90.1
nawcc	58,757	2.8	92.9
nuwcn	53,750	2.6	95.5
aronc	46,669	2.2	97.7
darpa	19,525	0.9	98.7
atcol	10,378	0.5	99.2
atcom	5,942	0.3	99.4
nawcp	4,546	0.2	99.7
armsb	3,007	0.1	99.8
nrlss	1,391	0.07	99.9
philh	1,118	0.05	99.9
onavy	566	0.03	100
nccos	381	0.02	100
nrlmr	305	0.01	100

**Table 5. CEWES MSRC C90 Utilization by ACID, Jul-Dec 97**

ACID	Total CPU hrs	Avg #PEs	Cum % CPU
cewes	211,013	75	48.3
nrlss	102,518	50	71.8
onrdc	47,591	73	82.7
phile	47,252	62	93.6
afosr	9,793	57	95.8
philk	9,291	256	97.9
nccos	7,119	50	99.6
writw	1,557	19	99.9
atcom	323	22	100.0
nuwcn	19	64	100.0
dswaa	9	22	100.0

**Table 6. CEWES MSRC T3E Utilization by ACID, Sep-Nov 97**

Table 7 lists the top users of the IBM SP during the September – November 1997 time period. They are NRL-Stennis, CEWES, ONR-DC, ARO-North Carolina, and NRL-DC. As with the T3E, most of these are averaging around 50 PEs. NRL-Stennis is using almost half the SP in terms of CPU time.

ACID	Total CPU hrs	Avg #PEs	Cum % CPU
nrlss	96,533	65	41.1
cewes	66,216	34	69.4
onrdc	24,248	21	79.7
aronc	18,584	51	87.6
nrldc	10,237	63	92.0
micom	7,264	7	95.1
atcom	4,147	25	96.9
darpa	3,980	53	98.6
writw	3,336	31	99.9
arlap	1	1	100

**Table 7. CEWES MSRC SP Utilization by ACID, Sep-Nov 97**

## II. CFD TAXONOMY

Table 8 lists the top twenty CFD users on the Cray C90 during the July – December 1997 time period. It also lists their locations, ACIDs, and the primary codes they are running. Because CFD continues to be a major user of the C90, the full list has been supplied to the CMG for priority support in migrating these codes to the scalable parallel machines if possible. In addition, Dr. Steve Bova, the on-site CFD lead for PET, will continue to contact and support these users in their efforts to move to the parallel machines as appropriate.

Location	User Name	ACID	Primary Codes	MWh	Cum %MWh
WPAFB	visbal	writw	a.out	127,133	8.8
SAIC	d603066	dswaa	femap, flo2d, flo3d, flo97, flo98	95,825	15.4
Univ of AZ	wernzs	afosr	nst3d	74,135	20.5
NRL-DC	grinstei	nrldc	a.out	73,528	25.6
Aerospace Corp	Jctwang	smcca	blst, esrmu2, h2a2, vbstg	70,696	30.4
NSWC-Carderock	gorski	nswcc	dtns3d	66,514	35.0
Boeing	wai	philk	overflow	66,036	39.6
Univ of AZ	dietmar	afosr	nsaswk, nscc	65,212	44.1
CRAFT	byork	nswcd	craft, parch3d	54,356	47.8
Univ of VT	wu	onrdc	a.out	54,152	51.6
LBL	ferguson	dswaa	amr2d, amr3d	48,426	54.9
NRL-DC	ravi	nrldc	feic25,feic71, gen3d	45,681	58.1
Univ of AZ	paul	arlap	nscc	37,440	60.6
WPAFB	gaitonde	writw	deltacha, fine	34,482	63.0
Univ of AZ	bachmanc	onrdc	nst3d	33,728	65.4
EBC	wagnerca	onavy	rans, nfc3d	32,367	67.6
Logicon	alampson	philk	mint_6, pmint_6	30,334	69.7
NSWC-Carderock	griffin	nswcc	iflow36	27,170	71.6
Aerospace Corp	u18016	smcca	blst, h2a, lsf11, lsigf11	26,856	73.4
NRAI	robins	nswcc	ir3d	24,685	75.1

**Table 8. Top CEWES MSRC CFD Users on C90, Jul-Dec 97**

Table 9 lists the top (total of six) CFD users of the Cray T3E during the September – November 1997 time period. Despite the fact that many CFD codes are highly vectorized, some users in this CTA have begun the migration process, with assistance from CMG or PET as necessary. As indicated in Table 3, CFD is the fourth largest user of the T3E.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
Ga Tech	ajs	onrdc	Leslie2d, ramjet	42,203	81	78.4
Ga Tech	wwkim	onrdc	Leslie3d	9,656	61	96.4
WPAFB	grismemj	writw	Cobalt	1,557	22	99.3
NASA	wissink	atcom	Overflow	323	22	99.9
Stanford	jfreund	onrdc	Pjet	43	19	100.0
ARA	jcrepeau	dwsaa	Sharc	9	8	100.0

**Table 9. Top CEWES MSRC CFD Users on T3E, Sep-Nov 97**

Table 10 lists the top users (total of eight) CFD users of the IBM SP during the September – November 1997 time period. As indicated in Table 4, CFD is the third largest user of the SP.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
Stanford	jfreund	onrdc	Stdin, jw, sauce	24,248	21	62.2
CRAFT	kenzakow	micom	Stdin, batch	7,266	6	80.9
CRAFT	tramel	atcom	Check, chessi, locaas	3,960	30	91.0
WPAFB	grismemj	writw	Amid, awb, b19, garv, nasa2, nasaf77, nasavg, nasatest	1,783	31	95.6
WPAFB	wurtzlke	writw	Bob3mta, mist	1,456	48	99.3
MCAT	wissink	atcom	Stdin, desc_delta, wing_pylon, x38	186	22	99.8
WPAFB	gaitonde	writw	Deltapbs	68	1	100.0
WPAFB	mortonsa	writw	Delaerun	1	17	100.0

**Table 10. Top CEWES MSRC CFD Users on SP, Sep-Nov 97**

### III. CSM TAXONOMY

Table 11 lists the top twenty CSM users on the Cray C90 during the July – December 1997 time period. Although some major CSM utilization has been migrated to the scalable parallel platforms, it remains the second largest resource user of the C90. So the full list will be supplied to the CMG for prioritization in migrating these users to the parallel machines. In addition, Dr. Rick Weed, the on-site CSM lead for PET, will continue to contact and support these users in their efforts to move to the parallel machines as appropriate.

Location	User Name	ACID	Primary Codes	MWh	Cum %MWh
SUNY	remjones	nswcc	standard	46,486	19.9
NAWC	gill	nawcc	cth	45,712	39.4
CEWES	h5ssatb0	cewes	cthrez, microcth	25,220	50.2
NSWC	ajq	nswcc	csa nastran, sababs	20,026	58.7
NSWC	geversti	nswcc	csa nastran	18,475	66.6
CEWES	h5sdosa0	cewes	epic95	17,162	74.0
NSWC	rcheng	nswcc	csa nastran, surf_c90	16,619	81.1
CEWES	ppp1795	cewes	dyna3d, d3_97, taurusb4	13,174	86.7
CEWES	h5sdrrm0	cewes	epic97	9,448	90.7
MDB	walsh	arlap	epic95	6,386	93.5
CEWES	brittr	cewes	rage	4,787	95.5
CEWES	h5ssajb0	cewes	d3_97, dyna3d	4,265	97.3
NSCW- Carderock	rvasu	nswcc	nnr5darb,sara2d	3,375	98.8
AMSRL	gazonas	arlap	dyna3d	1,738	99.5
CEWES	horner	cewes	a.out	630	99.8
NSWC- Carderock	rdawson	nswcc	timint96	166	99.9
CEWES	h5sccsg0	cewes	standard	99	99.9
CEWES	h5ssaap0	cewes	taurusb6	83	99.9
NSWC- Carderock	ingler	nswcc	timint96	53	100.0
NSWC- Carderock	mantz	nswcc	timint96	30	100.0

**Table 11. Top CEWES MSRC CSM Users on C90, Jul-Dec 97**

Table 12 lists the top (total of eleven) CSM users of the Cray T3E during the September – November 1997 time period. As indicated in Table 3, CSM is the largest resource user of the T3E.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
CEWES	bevinst	cewes	mpicth	73,006	157	36.2
CEWES	byron2	cewes	mpicth, cthplt	66,773	76	69.3
CEWES	byron	cewes	mpicth, cthplt	21,120	80	79.8
CEWES	h5ssatb0	cewes	mpicth	19,602	77	89.5
CEWES	alexc	cewes	mpipart	13,997	106	96.4
CEWES	h5sccsg0	cewes	mpicth	3,458	44	98.2
CEWES	ppp1795	cewes	dyna3d	1,602	18	99.0
CEWES	kdaniels	N/A	paraable	1,012	118	99.5
CEWES	nrkraju	cewes	dyna3d	533	64	99.7
LLNL	empierce	N/A	dyna3d	519	20	100.0
SNLA	mgelric	cewes	mpicth	24	8	100.0

**Table 12. Top CEWES MSRC CSM Users on T3E, Sep-Nov 97**

Table 13 lists the top users (total of three) CSM users of the IBM SP during the September – November 1997 time period. As indicated in Table 4, CSM is the second largest user of the SP.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
CEWES	h5ssatb0	cewes	t25, ktc, airb, tank3d, e25	28,549	74	48.1
CEWES	byron	cewes	building	16,724	64	76.3
CEWES	h5sccsg0	cewes	b2d, bench2d, bench3d, borehole	14,075	48	100.0

**Table 13. Top CEWES MSRC CSM Users on SP, Sep-Nov 97**

#### IV. CWO TAXONOMY

Table 14 lists the top (total of eleven) CWO users on the Cray C90 during the July – December 1997 time period. Although some major CWO utilization has been migrated to the scalable parallel platforms, it remains the fourth largest resource user of the C90. So the full list will be supplied to the CMG for prioritization in migrating these users to the parallel machines. In addition, the on-site CWO lead for PET will continue to contact and support these users in their efforts to move to the parallel machines as appropriate.

Location	User Name	ACID	Primary Codes	MWh	Cum %MWh
CEWES	h2cdpj0	cewes	boat	52,336	48.5
Univ of CA	jacobitz	N/A	cftsq	31,662	77.8
VIMS	h2crohw0	cewes	ch3d	16,269	92.9
Univ of CA	sarkar	AFOSR	cftsq	4,604	97.2
AFRL-Hanscom	dcnplh	philh	gsm	1,118	98.2
CEWES	cialonea	cewes	wam	776	98.9
NRL-DC	evans	nrldc	binx1	450	99.4
NRL-Monterey	ridout	nrlmr	gotcrlsc	305	99.6
USM	shulman	onrdc	pwc	256	99.9
CEWES	diamond	cewes	p1wiswav, wistst	95	100.0
CEWES	maddog	cewes	wam	30	100.0

**Table 14. Top CEWES MSRC CWO Users on C90, Jul-Dec 97**

Table 15 lists the top (total of six) CWO users of the Cray T3E during the September – November 1997 time period. As indicated in Table 3, CWO is the second largest resource user of the T3E.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
NRL-Stennis	Hogan	nrlss	hib5, tib5	36,237	95	35.6
NRL-Stennis	Shriver	nrlss	hib6, tib6	29,049	34	64.1
NRL-Stennis	Metzger	nrlss	hib6, tib6	28,102	87	91.8
Univ of CA	Jacobitz	N/A	cftsq	5,344	64	97.0
MSAAP	Smedstad	nrlss	tib6	2,484	32	99.4
NRL-Stennis	Wallcraf	nrlss	halo, hib5, hib6	555	44	100.0

**Table 15. Top CEWES MSRC CWO Users on T3E, Sep-Nov 97**

Table 16 lists the top users (total of seven) CWO users of the IBM SP during the September – November 1997 time period. As indicated in Table 4, CWO is the largest user of the SP.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
NRL	Hogan	nrlss	r013aix, r021aix, r022aix, r031aix	53,808	82	57.3
NRL	Metzger	nrlss	r061aix, r062aix, r063aix, r064aix	38,596	63	98.4
NRLSS	Wallcraf	nrlss	Halo, heun, rbsor	791	62	99.2
U OF NC	Jhench	cewes	t2d	318	1	99.6
VIMS	h2crohw0	cewes	Gendep, bar7, bar8, lalb	237	1	99.8
CEWES	Mbrown	cewes	Ibm	79	1	99.9
CEWES	Boss	cewes	Caty, utar gck, etc.	75	1	100.0

**Table 16. Top CEWES MSRC CWO Users on SP, Sep-Nov 97**

## V. EQM TAXONOMY

Table 17 lists the top (total of ten) EQM users on the Cray C90 during the July – December 1997 time period. Although some major EQM utilization has been migrated to the scalable parallel platforms, it remains the fifth largest resource user of the C90. So the list will be supplied to the CMG for prioritization in migrating these users to the parallel machines. In addition, Dr. Bob Fithen, the on-site EQM lead for PET, will continue to contact and support these users in their efforts to move to the parallel machines as appropriate.

Location	User Name	ACID	Primary Codes	MWh	Cum %MWh
CEWES	h2crpkk0	Cewes	rma10, ch3d	34,946	64.4
CEWES	h6heerm0	Cewes	rma10, hydro_51	11,970	86.5
CEWES	pettway	Cewes	rma10	2,999	92.0
CEWES	shkreli	Cewes	ch3d, tfl	1,347	94.5
CEWES	stocksti	Cewes	crayfish	1,196	96.7
CEWES	gbrown	Cewes	rma10	746	98.1
CEWES	ballard	Cewes	rpict	402	98.8
CEWES	araman	N/A	cftail	355	99.5
CEWES	h4esqbb0	Cewes	uches_wq	224	99.9
CEWES	h6heech0	Cewes	rma10	44	100.0

**Table 17. Top CEWES MSRC EQM Users on C90, Jul-Dec 97**

Table 18 lists the top (total of four) EQM users of the Cray T3E during the September – November 1997 time period. EQM was not a large resource user at that time; however, the recent parallelization of the CE-QUAL-ICM code by the PET team at

TICAM-Texas is allowing significant use of T3E resources for production calculations of the Chesapeake Bay management data, so this should improve in the next cycle.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
CEWES	ctracyf	cewes	Ft	608	99	73.1
CEWES	tracyf	cewes	Ft	182	33	95.0
CEWES	bernard	cewes	p3d	33	43	98.9
CEWES	h4esqmn0	cewes	parwqm	9	12	100.0

**Table 18. Top CEWES MSRC EQM Users on T3E, Sep-Nov 97**

Table 19 lists the top users (total of four) EQM users of the IBM SP during the September – November 1997 time period. EQM is not yet a large resource user of the SP, but we expect an increase during the next reporting period.

Location	User Name	ACID	Primary Codes	CPU hrs	Avg #PEs	Cum %CPU
CEWES	maier	cewes	fcc, per	469	20	39.2
CEWES	tracyf	cewes	fred	406	36	73.2
CEWES	h4esqmn0	cewes	parwqm, wqm, bench16	302	9	98.4
CEWES	h6hepb1	cewes	r2	19	1	100.0

**Table 19. Top CEWES MSRC EQM Users on SP, Sep-Nov 97**

## A. User-Project Information

### A.1 CFD Projects

<pre> Userid : visbal Last Name : Visbal First Name : Miguel Middle Name : R. User Status : Current Phone : 937-255-2455 Address : Wright Laboratory/FIMC ATTN: Miguel Visbal 2645 Fifth Street, Suite 7 WPAFB, OH 45433-7913 Email : visbal@fim.wpafb.af.mil ACID : writwf08 Project : Computational Research in Multidisciplinary CFD and CEM PI : Dr. Miguel Visbal ***** Userid : d603066 Last Name : Baum First Name : Joseph, Dr. Middle Name : D. User Status : Current Phone : 703-827-4952 Address : Science Applications Intl. Corp. ATTN: Dr. Joseph D. Baum P.O. Box 1303 1710 Goodridge Drive McLean, VA. 22102 Email : baum@mclapo.apo.saic.com ACID : dswaadd2 Project : Numerical Integration of CFD/CSD Methodologies PI : Dr. Joseph D. Baum ***** Userid : wernzs Last Name : Wernz First Name : Stefan Middle Name : User Status : Current Phone : 520-621-2771 Address : University of Arizona AME-Dept. Bldg. 119 Room 628 Tucson, AZ 85721 Email : faselh@ccit.arizona.edu ACID : afosrfal Project : Numerical Simulation of Wall Jets PI : Hermann Fasel ***** *****</pre>	<pre> Userid : gaitonde Last Name : Gaitonde First Name : Datta Middle Name : V. User Status : Current Phone : 937-255-7127 Address : Wright Laboratory/FIMC ATTN: Datta Gaitonde Bldg. 450 2645 Fifth Street, Suite 7 WPAFB, OH 45433-7913 Email : datta@fim.wpafb.af.mil ACID : writwf28 Project : Shock Wave Turbulent Boundary Layer Interactions at high speed PI : Datta Gaitonde ***** Userid : bachmanc Last Name : Cary R. Bachman First Name : Middle Name : User Status : Deleted Phone : 520-621-4424 Address : University of Arizona Bldg 16 Tucson, AZ 85721 Email : cary@vega.ame.arizona.edu ACID : ??? Project : ??? PI : ??? ***** Userid : wagnerca Last Name : Wagner First Name : Craig Middle Name : A. User Status : Current Phone : 860-433-6851 Address : Electric Boat Corporation ATTN: Dr. Craig A. Wagner 75 Eastern Point Road Groton, CT 06340 Email : cwagner@gdeb.com ACID : onavy092 Project : Advanced NSSN Submarine Hydrodynamic Studies PI : Dr. Craig Wagner ***** *****</pre>
	Userid : griffin

Userid : grinstei  
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Middle Name : F.  
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ACID : nrldc253  
Project : Dynamics of Entrainment and  
Combustion Control with Countercurrent  
Coaxial Jets  
PI : Fernando F. Grinstein  
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UserId : jctwang  
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Project : Multi-Body Launch Vehicle  
CFD Simulations  
PI : Ejike Ndefo  
\*\*\*\*\*  
UserId : gorski  
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Project : CFD for Naval Vehicles  
PI : Joseph J. Gorski  
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Last Name : Griffin  
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ACID : nswcc002  
Project : CFD for Naval Applications  
PI : Thomas T. Huang  
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Project : Multi-Body Launch Vehicle  
CFD Simulations  
PI : Ejike Ndefo  
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Project : COIL Technology Development  
PI : Alan Lampson

<p>Last Name : John C. Wai  First Name :  Middle Name :  User Status : Disabled  Phone : 206-662-0057  Address : Boeing Defense And Space Group  PO Box 3999,  M/S 4C-61  Seattle, WA 98124-2499  Email : jcw2338@hef.ds.boeing.com  ACID : ???  Project : ???  PI : ???</p>	<p>Last Name : Robins  First Name : Robert  Middle Name : E.  User Status : Current  Phone : 425-644-9660 x305  Address : Northwest Research Associates, Inc.  ATTN: Robert E. Robins  Bldg. #7  300 120th Ave NE  Bellevue, WA 98005  Email : bob@zelda.nwra.com  ACID : nswcc005  Project : Standard Crimson Computational Support  PI : Robert E. Robins</p> <hr/> <hr/>
<hr/> <p>Userid : dietmar  Last Name : Dietmar Trourbier  First Name :  Middle Name :  User Status : Disabled  Phone : 520-621-4424  Address : Aerospace and Mechanical Engineering  The University of Arizona  AME Building 16  Tucson, AZ 85721  Email : dietmar@cfd.ame.arizona.edu  ACID : ???  Project : ???  PI : ???</p> <hr/>	<p>Userid : ajs  Last Name : Arunajatesan  First Name : Srinivasan  Middle Name :  User Status : Current  Phone : 404-894-1409  Address : Georgia Institute of Technology  ATTN: Srinivasan Arunajatesan  School of Aerospace Engineering  Guggenheim Building  270 Ferst Drive  Atlanta, GA 30332-0150  Email : ajs@kestrel.ae.gatech.edu  ACID : onrdc039  Project : Large-Eddy Simulations of Turbulent Reacting Flows  PI : Suresh Menon</p> <hr/>
<p>Userid : byork  Last Name : York  First Name : Brian  Middle Name : J.  User Status : Current  Phone : 215-249-9780  Address : Combustion Research and Flow Technology (Craft Tech)  ATTN: Brian York  174 North Main Street, Building 3  P. O. Box 1150  Dublin, PA 18917  Email : york@nas.nasa.gov  ACID : micomkk1  Project : Aerothermochemical Analysis Measurement, Sub-project of 0011 BW1  Sanford Dash...  PI : Kevin Kennedy</p> <hr/>	<p>Userid : wwkim  Last Name : Kim  First Name : Won-Wook  Middle Name :  User Status : Current  Phone : 404-894-7509  Address : Georgia Institute of Technology  ATTN: Won-Wook Kim  School of Aerospace Engineering  Montgomery Knight Bldg  North Avenue  Atlanta, GA 30332-0150  Email : kim@kestrel.ae.gatech.edu  ACID : onrdc039  Project : Large-Eddy Simulations of Turbulent Reacting Flows  PI : Suresh Menon</p> <hr/>

Userid : wu Last Name : Wu First Name : Xiaohua Middle Name : User Status : Current Phone : 802-656-0978 Address : University of Vermont Mechanical Engineering Dept. ATTN: Xiaohua Wu 209 Votey Bldg. Burlington, VT 05405 Email : wu@emba.uvm.edu ACID : onrdc009 Project : Large Eddy Simulation of Three-Dimensional Turbulent Boundary Layers PI : Kyle D. Squires ***** ***** Userid : ferguson Last Name : Ralph Ferguson First Name : Middle Name : User Status : Disabled Phone : 301-593-4471 Address : Suite 500 Enig Associates, Inc. 11120 New Hampshire Ave. Silver Spring, MD 20904-2633 Email : ferguson@mothra.lbl.gov ACID : ??? Project : ??? PI : ??? ***** Userid : ravi Last Name : Ramamurti First Name : Ravi Middle Name : User Status : Current Phone : 202-767-0608 Address : Naval Research Lab ATTN: Ravi Ramamurti Code 6410 NRL-DC 4555 Overlook Ave., SW, Washington, DC 20375-5444 Email : ravi@lcp.nrl.navy.mil ACID : nrldc251 Project : Simulation of Turbulent Flows PI : Ravi Ramamurti *****	Userid : grismemj Last Name : Grismer First Name : Matthew Middle Name : J. User Status : Current Phone : 937-255-3413 Address : Wright Laboratory/FIMC ATTN: Matthew J. Grismer Bldg 450, Area B 2645 Fifth Street, Suite 7 Wright-Patterson AFB, OH 45433 Email : grismemj@fim.wpafb.af.mil ACID : writwfo3 Project : Applied CFD Research and Development PI : Don W. Kinsey *****  Userid : wissink Last Name : Wissink First Name : Andrew Middle Name : User Status : Current Phone : 650-604-4455 Address : MCAT, Inc. NASA Ames Research Center ATTN: Andrew Wissink M/S 258-1 Moffett Field, CA 94035-1000 Email : wissink@nas.nasa.gov ACID : atcomrlm Project : CHSSI Core Project CFD-4: Scalable Dynamic Chimera Methods for Unsteady Aerodynamics PI : Robert L. Meakin ***** Userid : jfreund Last Name : Freund First Name : Jonathan Middle Name : User Status : Current Phone : 415-723-9602 Address : Stanford University Mechanical Engineering ATTN: Jonathan Freund Building 500 Stanford, CA 94305 Email : jon@ctr-next7.stanford.edu ACID : onrdc068 Project : Direct Numerical Simulation of a Round Supersonic Jet PI : Parviz Moin *****
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<p>Userid : paul          Last Name : Paul J. Harris          First Name :          Middle Name :          User Status : Disabled          Phone : 520-621-4424          Address : Aerospace and Mechanical          Engineering Department          The University of Arizona          AME Building 16          Tucson, AZ 85721          Email : paul@vega.AME.Arizona.EDU          ACID : ???          Project : ???          PI : ???          ****</p> <p>Userid : tramel          Last Name : Tramel          First Name : Robert          Middle Name :          User Status : Current          Phone : 615-455-2617 ext. 251          Address : Micro Craft Inc.          ATTN: Robert Tramel          P.O. Box 370          207 Big Springs Ave.          Tullahoma, TN 37388          Email : rtramel@microcraft.com          ACID : atcomrlm          Project : CHSSI Core Project CFD-4:          Scalable Dynamic Chimera Methods for          Unsteady Aerodynamics          PI : Robert L. Meakin          ****</p> <p>Userid : wurtzlke          Last Name : Wurtzler          First Name : Kenneth          Middle Name : E.          User Status : Current          Phone : 937-255-3761          Address : Wright Laboratory/FIMC          Bldg. 450          2546 Fifth Street, Suite 7          WPAFB, OH 45433-7913          Email : wurtzler@fim.wpafb.af.mil          ACID : writwf03          Project : Applied CFD Research and          Development          PI : Don W. Kinsey</p>	<p>Userid : jcrepeau          Last Name : Crepeau          First Name : Joseph          Middle Name :          User Status : Current          Phone : 505-883-3636          Address : Applied Research Associates          ATTN: Joseph Crepeau          Suite A-220          San Mateo Blvd NE          Albuquerque, NM 87110          Email : jcrepeau@ara.com          ACID : dscaa20c          Project : Installation and Support          PI : Joseph Crepeau          ****</p> <p>Userid : kenzakow          Last Name : Kenzakowski          First Name : Donald          Middle Name : C.          User Status : Current          Phone : 215-249-9780          Address : Combustion Research and Flow          Technology (Craft Tech)          ATTN: Don Kenzakowski          174 North Main Street, Building 3          P. O. Box 1150          Dublin, PA 18917          Email : kenzakow@nas.nasa.gov          ACID : micomkk1          Project : Aerothermochemical Analysis          Measurement, Sub-project of 0011 BW1          Sanford Dash...          PI : Kevin Kennedy          ****</p> <p>Userid : mortonsa          Last Name : Morton          First Name : Scott          Middle Name :          User Status : Current          Phone : 937-255-7127          Address : Wright Lab WL/FIMC          Bldg 450          2645 Fifth St., Suite 7          Wright Patterson AFB, Ohio 45433-7913          Email : mortonsa@fim.wpafb.af.mil          ACID : writwf38          Project : Dynamic Full aircraft Fluid-          Structure Interaction          PI : Scott Morton</p>
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## A User-Project Information

### A.2 CWO Projects

Userid : h2cdpj0 Last Name : Rhee First Name : Joonpyo (Joon) Middle Name : User Status : Current Phone : 601-634-2029 Address : USAE Waterways Experiment Station ATTN: Joon Rhee/CEWES-CC-P 3909 Halls Ferry Road Vicksburg, MS 39180 Email : j.rhee@cerc.wes.army.mil ACID : ceweshsp Project : Hydrodynamic & Sediment Processes PI : Bob Jensen *****	Userid : ridout Last Name : Ridout First Name : James Middle Name : A. User Status : Current Phone : 408-656-4793 Address : Naval Research Laboratory 7 Grace Hopper Ave. Monterey, CA 93943-5502 Email : ridout@nrlmry.navy.mil ACID : nrlmr026 Project : Atmospheric Process Studies PI : Timothy F. Hogan ***** UserId : shulman Last Name : Shulman First Name : Igor Middle Name : User Status : Current Phone : 228-688-3403 Address : University of Southern Mississippi ATTN: Igor Shulman Bldg. 1103, Room 249 Stennis Space Center, MS 39529 Email : shulman@coam.usm.edu ACID : onrdc101 Project : Data Assimilation & Coupling the Global NRL Model with the Regional Princeton Ocean Model PI : Igor Shulman ***** UserId : diamond Last Name : Brooks First Name : Rebecca Middle Name : M. User Status : Current Phone : 601-634-2406 Address : CEWES-CN-C Email : r.brooks@cerc.wes.army.mil ACID : ceweshsp Project : Hydrodynamic & Sediment Processes PI : Bob Jensen *****
Userid : h2crohw0 Last Name : Wang First Name : Harry Middle Name : V. User Status : Current Phone : 804-684-7215 Address : The College of William and Mary Dept. of Physical Sciences Virginia Institute of Marine Science Gloucester Point, VA 23062 Email : wang@vims.edu ACID : ceweshsp Project : Hydrodynamic & Sediment Processes PI : Bob Jensen ***** *	UserId : maddog Last Name : Jensen First Name : Robert (Bob) Middle Name : E. User Status : Current Phone : 601-634-2101 Address : CEWES-CR Email : jensen@madmax.wes.army.mil

<pre>         Userid : sarkar         Last Name : Sarkar         First Name : Sutanu         Middle Name :         User Status : Current         Phone : 619-534-8243         Address : University of California at         San Diego         Applied Mechanics and Engineering         Sciences         ATTN: Sutanu Sarkar         MC 0411, EBU-II         9500 Gilman Drive         La Jolla, CA 92093         Email : sarkar@ames.ucsd.edu         ACID : afosrsa2         Project : Simulation of Compressible         Turbulent Reactive Flows         PI : Sutanu Sarkar         ****         Userid : dcnplh         Last Name : Norquist         First Name : Donald         Middle Name : C.         User Status : Current         Phone : 617-377-2962         Address : Phillips Laboratory         ATTN: Donald C. Norquist         1102C Atmospheric Sciences Div.         29 Randolph Road         Hanscom AFB, MA 01731-3010         Email : norquist@plh.af.mil         ACID : philhab1         Project : Numerical Weather Prediction         Studies         PI : George Modica         ****         Userid : cialonea         Last Name : Cialone         First Name : Alan         Middle Name :         User Status : Current         Phone : 601-634-3095         Address : CEWES-CN-C         Email : a.cialone@cerc.wes.army.mil         ACID : ceweshsp         Project : Hydrodynamic &amp; Sediment         Processes         PI : Bob Jensen         ****     </pre>	<pre>         ACID : ceweshsp         Project : Hydrodynamic &amp; Sediment         Processes         PI : Bob Jensen         Userid : hogan         Last Name : Hogan         First Name : Patrick         Middle Name : J         User Status : Current         Phone : 228-688-4537         Address : Naval Research Lab         ATTN: Patrick Hogan         Code 7323         Bldg 1008         Stennis Space Center, MS 39529         Email : hogan@nrlssc.navy.mil         ACID : nrlss018         Project : Eddy-Resolving Global and         Basin-Scale Ocean Model         PI : Alan Wallcraft         ****         Userid : shriver         Last Name : Shriver         First Name : Jay         Middle Name : F         User Status : Current         Phone : 228-688-4625         Address : Naval Research Lab         ATTN: Jay Shriver         Bldg. 1007 NRL Code 7323         Stennis Space Center, MS 39529-5004         Email : shriver@nrlssc.navy.mil         ACID : nrlss018         Project : Eddy-Resolving Global and         Basin-Scale Ocean Model         PI : Alan Wallcraft         ****         Userid : metzger         Last Name : Metzger         First Name : Joseph         Middle Name :         User Status : Current         Phone : 228-688-4762         Address : Naval Research Lab.         ATTN: Joseph Metzger         Code 7323         Bldg. 1007         Stennis Space Center, Ms 39529-5004         Email : metzger@nrlssc.navy.mil         ACID : nrlss018         Project : Eddy-Resolving Global and         Basin-Scale Ocean Model         PI : Alan Wallcraft         ****         ***     </pre>
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```

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ACID : nrldc203
Project : Coastal Ocean Physics
PI : Colin Y. Shen
*****
UserId : boss
Last Name : Brandon
First Name : Willie
Middle Name : A.
User Status : Current
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Address : CEWES-CN-C
Email : w.brandon@cerc.wes.army.mil
ACID : celeshsp
Project : Hydrodynamic & Sediment
Processes
PI : Bob Jensen
*****
UserId : mbrown
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First Name : Mitchell
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mbrown@anguilla.cerc.wes.army.mil
ACID : celeshsp
Project : Hydrodynamic & Sediment
Processes
PI : Bob Jensen
*****

```

```

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Middle Name : Martin
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Stennis Space Center, MS 39529
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ACID : nrlss018
Project : Eddy-Resolving Global and
Basin-Scale Ocean Model
PI : Alan Wallcraft
*****
UserId : wallcraf
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*****
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Project : Hydrodynamic & Sediment
Processes
PI : Bob Jensen
*****

```

## A User-Project Information

### A.3 CSM Projects

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<pre> Userid : ajq Last Name : Quezon First Name : Antonio Middle Name : J. User Status : Current Phone : 301-227-3618 Address : Naval Surface Warfare Center ATTN: Antonio J. Quezon Carderock Division/Code 26 9500 MacArthur Boulevard West Bethesda, MD 20817-5700 Email : quezon@oasys.dt.navy.mil ACID : nswcc020 Project : Structural Acoustics Performance Prediction PI : Gordon C. Everstine ***** Userid : geversti Last Name : Everstine, Dr. First Name : Gordon Middle Name : C. User Status : Current Phone : 301-227-4410 Address : Naval Surface Warfare Center ATTN: Dr. Gordon C. Everstine Carderock Division/Code 26 9500 MacArthur Boulevard West Bethesda, MD 20817-5700 Email : geversti@oasys.dt.navy.mil ACID : nswcc020 Project : Structural Acoustics Performance Prediction PI : Gordon C. Everstine ***** Userid : h5sdosa0 Last Name : Akers First Name : Stephen Middle Name : A. User Status : Current Phone : 601-634-2881 Address : CEWES-SD-R Email : akersss@ex1.wes.army.mil ACID : cewessps Project : Survivability and Protective Structures PI : Raju Namburu ***** </pre>	<pre> Userid : brittr Last Name : Britt First Name : James Middle Name : User Status : Current Phone : 318-766-4282 Address : CEWES-SD-R/SAIC Rt 1 Box 12825 St. Joseph, La 71366 Email : robert_britt@cpqm.saic.com ACID : cewessps Project : Survivability and Protective Structures PI : Raju Namburu ***** ***  Userid : h5ssajb0 Last Name : Baylot First Name : James Middle Name : T. User Status : Current Phone : 601-634-2137 Address : CEWES-SS-A Email : baylotj@ex1.wes.army.mil ACID : cewessps Project : Survivability and Protective Structures PI : Raju Namburu ***** Userid : rvasu Last Name : Vasudevan First Name : Ranganathan Middle Name : User Status : Current Phone : 301-227-1636 Address : Naval Surface Warfare Center Carderock Division, Code 7250 ATTN: Dr. Ranganathan Vasudevan 9500 MacArthur Blvd. West Bethesda, MD 20817-5700 Email : vasudeva@oasys.dt.navy.mil ACID : nswcc012 Project : Hull Modification Impact Studies PI : Ranganathan Vasudevan *****</pre>
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 Middle Name : Sheng-Chieh  
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 ACID : nswcc020  
 Project : Structural Acoustics  
 Performance Prediction  
 PI : Gordon C. Everstine  
 \*\*\*\*  
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 Middle Name : L.  
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 Survivability  
 PI : Frederick Costanzo  
 \*\*\*\*  
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 Email : sharon@smdi2.wes.army.mil  
 ACID : cewessps  
 Project : Survivability and Protective  
 Structures  
 PI : Raju Namburu  
 \*\*\*\*

Userid : gazonas  
 Last Name : Gazonas  
 First Name : George  
 Middle Name :  
 User Status : Current  
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 Address : AMSRL-WM-PD  
 Army Research Lab  
 390  
 Aberdeen Proving Ground  
 Aberdeen, MD 21005-506  
 Email : gazonas@arl.mil  
 ACID : arlap102  
 Project : Ballistic Structural  
 Response  
 PI : Frederick H. Gregory  
 \*\*\*\*  
 Userid : horner  
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 User Status : Current  
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 3909 Halls Ferry Rd.  
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 ACID : cewessus  
 Project : Sustainment Engineering  
 PI : Albert J. Bush III  
 \*\*\*\*  
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 Userid : ingler  
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 User Status : Current  
 Phone : 804-523-8373 x-330  
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 ACID : nswcc008  
 Project : Underwater Explosion  
 Survivability  
 PI : Frederick Costanzo  
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## A User-Project Information

### A.4 EQM Projects

<pre> Userid : h2cdpj0 Last Name : Rhee First Name : Joonpyo (Joon) Middle Name : User Status : Current Phone : 601-634-2029 Address : USAE Waterways Experiment Station ATTN: Joon Rhee/CEWES-CC-P 3909 Halls Ferry Road Vicksburg, MS 39180 Email : j.rhee@cerc.wes.army.mil ACID : ceweshsp Project : Hydrodynamic &amp; Sediment Processes PI : Bob Jensen ***** </pre> <pre> Userid : jacobitz Last Name : Jacobitz First Name : Frank Middle Name : User Status : Deleted Phone : 619-534-5962 Address : University of California Department of Applied Mechanics and Engineering Sciences ATTN: Frank Jacobitz (UCSD-AMES) Mail code 0411 9500 Gilman Drive La Lolla, CA 92093-0411 Email : jacobitz@ames.ucsd.edu ACID : ??? Project : ??? PI : ??? *****</pre> <pre> Userid : h2crohw0 Last Name : Wang First Name : Harry Middle Name : V. User Status : Current Phone : 804-684-7215 Address : The College of William and Mary Dept. of Physical Sciences Virginia Institute of Marine Science Gloucester Point, VA 23062 Email : wang@vims.edu ACID : ceweshsp Project : Hydrodynamic &amp; Sediment Processes PI : Bob Jensen ***** ***</pre>	<pre> Userid : ridout Last Name : Ridout First Name : James Middle Name : A. User Status : Current Phone : 408-656-4793 Address : Naval Research Laboratory 7 Grace Hopper Ave. Monterey, CA 93943-5502 Email : ridout@nrlmry.navy.mil ACID : nrlmr026 Project : Atmospheric Process Studies PI : Timothy F. Hogan ***** </pre> <pre> Userid : shulman Last Name : Shulman First Name : Igor Middle Name : User Status : Current Phone : 228-688-3403 Address : University of Southern Mississippi ATTN: Igor Shulman Bldg. 1103, Room 249 Stennis Space Center, MS 39529 Email : shulman@coam.usm.edu ACID : onrdc101 Project : Data Assimilation &amp; Coupling the Global NRL Model with the Regional Princeton Ocean Model PI : Igor Shulman ***** </pre> <pre> Userid : diamond Last Name : Brooks First Name : Rebecca Middle Name : M. User Status : Current Phone : 601-634-2406 Address : CEWES-CN-C Email : r.brooks@cerc.wes.army.mil ACID : ceweshsp Project : Hydrodynamic &amp; Sediment Processes PI : Bob Jensen ***** </pre> <pre> Userid : maddog Last Name : Jensen First Name : Robert (Bob) Middle Name : E. User Status : Current Phone : 601-634-2101 Address : CEWES-CR Email : jensen@madmax.wes.army.mil </pre>
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<p>Userid : sarkar  Last Name : Sarkar  First Name : Sutanu  Middle Name :  User Status : Current  Phone : 619-534-8243  Address : University of California at San Diego  Applied Mechanics and Engineering Sciences  ATTN: Sutanu Sarkar  MC 0411, EBU-II  9500 Gilman Drive  La Jolla, CA 92093  Email : sarkar@ames.ucsd.edu  ACID : afosrsa2  Project : Simulation of Compressible Turbulent Reactive Flows  PI : Sutanu Sarkar</p> <p>*****</p> <p>Userid : dcnplh  Last Name : Norquist  First Name : Donald  Middle Name : C.  User Status : Current  Phone : 617-377-2962  Address : Phillips Laboratory  ATTN: Donald C. Norquist  1102C Atmospheric Sciences Div.  29 Randolph Road  Hanscom AFB, MA 01731-3010  Email : norquist@plh.af.mil  ACID : philhab1  Project : Numerical Weather Prediction Studies  PI : George Modica</p> <p>*****</p> <p>Userid : cialonea  Last Name : Cialone  First Name : Alan  Middle Name :  User Status : Current  Phone : 601-634-3095  Address : CEWES-CN-C  Email : a.cialone@cerc.wes.army.mil  ACID : ceweshsp  Project : Hydrodynamic &amp; Sediment Processes  PI : Bob Jensen</p> <p>*****</p>	ACID : ceweshsp Project : Hydrodynamic & Sediment Processes PI : Bob Jensen Userid : hogan Last Name : Hogan First Name : Patrick Middle Name : J User Status : Current Phone : 228-688-4537 Address : Naval Research Lab ATTN: Patrick Hogan Code 7323 Bldg 1008 Stennis Space Center, MS 39529 Email : hogan@nrlssc.navy.mil ACID : nrlss018 Project : Eddy-Resolving Global and Basin-Scale Ocean Model PI : Alan Wallcraft ***** Userid : shriver Last Name : Shriver First Name : Jay Middle Name : F User Status : Current Phone : 228-688-4625 Address : Naval Research Lab ATTN: Jay Shriver Bldg. 1007 NRL Code 7323 Stennis Space Center, MS 39529-5004 Email : shriver@nrlssc.navy.mil ACID : nrlss018 Project : Eddy-Resolving Global and Basin-Scale Ocean Model PI : Alan Wallcraft ***** Userid : metzger Last Name : Metzger First Name : Joseph Middle Name : User Status : Current Phone : 228-688-4762 Address : Naval Research Lab. ATTN: Joseph Metzger Code 7323 Bldg. 1007 Stennis Space Center, Ms 39529-5004 Email : metzger@nrlssc.navy.mil ACID : nrlss018 Project : Eddy-Resolving Global and Basin-Scale Ocean Model PI : Alan Wallcraft ***** ***
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